

### REMARKS

Applicant thanks the Examiner for the telephone interview dated March 16, 2010.

Claim 1, the Edward reference, and the Credelle reference were discussed. An agreement was reached that claim 1 is patentable over the Edward and Credelle references because they do not disclose or suggest a drive means that is arranged to alternate the supply of data signals to the first and second column address conductors of each conversion means, as recited in claim 1.

The comments of the Applicant below are each preceded by related comments of the Examiner in the Office Action dated December 8, 2009 (in small, bold type).

**3. Claims 1-7, 9, 11-19, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edward et al. (US Pub: 2002/0054005) in view of Credelle et al. (US Pub 2004/0246280).**

**As to claim 1, Edward teaches an active matrix display (i.e. the TFT LCD) device comprising a row and column array of picture elements (see Fig. 1),**

**sets of row and column address conductors for selecting rows of picture elements and providing data signals to the picture elements of a selected row respectively (i.e. the column and row electrode that lead to the individual LC pixel) (see Fig. 1),**

**drive means for supplying selection signals and multi-bit digital data signals respectively to the set of row address conductors and the set of column address conductors (see Fig. 1, elements 21, 23, and 25), and**

**in which the multi-bit digital data signals supplied to the column address conductors are converted into analogue voltage levels for use by the picture elements by a plurality of serial charge redistribution digital to analogue conversion means (see Fig. 3, [0023-0024]),**

**each conversion means comprising at least first and second capacitances interconnectable by at least one conversion switch and between which charge is shared (see Fig. 3), and**

**in which the first and second capacitances of a conversion means are provided by the capacitances of two column address conductors (see Fig. 7, 19a, 19b),**

**However, Edward is silent the drive means is arranged to alternate the supply of data signals to the first and second column address conductors.**

**Credelle teaches to alternate the supply of data signals to the first and second column address conductor (i.e. Credelle teaches the alternating data line input to the LCD active matrix by creating a positive and negative pattern by which the column is driven ) (see Fig. 4, Col. 3, Lines 7-35).**

**Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the alternating data line design of Credelle in the Edward's LCD system (i.e. having the dual or multiple column controlling switch C 31 to have the ability to allow the circuits to alternate polarity data to the circuitry) in order to minimize the degradation in the overall display system (see Credelle [0017]).**

Claim 1

Edwards and Credelle do not disclose a drive means that is arranged to alternate the supply of data signals to the first and second column address conductors of each conversion means, as recited in claim 1.

The Examiner acknowledges that Edwards does not disclose this limitation, but points to Credelle as disclosing what is missing in Edwards. Applicant disagrees.

Credelle discloses that each column line is driven by a column driver 110, and that image data is written to the panel a row at a time and is given a polarity bias scheme (paragraph [0014]). Credelle discloses examples in which the image data in adjacent lines have opposite polarities (see FIGS. 3 and 4). In Credelle, for any given column driver, the column driver provides image data to the same column line. The column driver of Credelle does not alternate the supply of data signals to first and second column address lines.

If the Examiner contends that the driver chip 301A of Credelle corresponds to the “drive means” of claim 1, then the driver chip 301A of Credelle also does not alternate the supply of data signals to first and second column address lines. Instead, the driver chip 301A of Credelle provides data signals having different polarities to different column address lines. In Credelle, all of the column address lines receive data signals at the same time, in which the data signals of different column lines may have different polarities. In claim 4, what is being alternated is the “supply of data signals” to the first and second column address conductors, which is different from alternating the “polarity of the data” supplied to the first and second column address conductors, as disclosed in Credelle. Thus, Credelle does not disclose or suggest drive means that is arranged to alternate the supply of data signals to the first and second column address conductors.

A person of ordinary skill in the art, after reading Edwards and Credelle, may have concluded that it is useful to use Edwards’ output amplifier 33 (FIG. 7) to provide digital data bits having a first polarity to the column conductor 19a, using the conversion means to convert the digital data into analog data, write the analog data to the pixel connected to the column conductor 19a, then provide digital data bits having a second polarity to the column conductor 19a, using the conversion means to convert the digital data into analog data, and write the analog

data to the pixel connected to the column conductor 19b, such that column conductors 19a and 19b have different polarities. The person of ordinary skill in the art would not have modified the drive circuit of Edwards to alternate the supply of data signals to the column conductors 19a and 19b (for example, by provide digital data bits having a first polarity to the column conductor 19a, using the conversion means to convert the digital data into analog data, write the analog data to the pixel connected to the column conductor 19a, then provide digital data bits having a second polarity to the column conductor 19b, using the conversion means to convert the digital data into analog data, and write the analog data to the pixel connected to the column conductor 19b).

Claims 12 and 17 are patentable for at least similar reasons as those applied to claim 1.

New claim 27

Edwards and Credelle do not describe and would not have made obvious “for a given picture element, the data signal in one frame is applied to one of the two column conductors and in the next frame the data signal is applied to the other of the two column conductors,” as recited in claim 27.

Credelle does not disclose or suggest a driving scheme in which driving of the column conductors varies from one frame to the next. What is missing in Credelle is also not disclosed or suggested in Edwards.

All of the dependent claims are patentable for at least the reasons for which the claims on which they depend are patentable.

Any circumstance in which the applicant has addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner. Any circumstance in which the applicant has made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims. Any circumstance in which the applicant has amended or canceled a claim does not mean that the applicant concedes any of the examiner’s positions with respect to that claim or other claims.

Applicant : Martin J. Edwards  
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Please apply \$156 for the excess claim fees and \$130 for the Petition for Extension of Time fee and any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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/Rex I. Huang/\_\_\_\_\_  
Rex I. Huang  
Reg. No. 57,661

Customer Number 26161  
Fish & Richardson P.C.  
Telephone: (617) 542-5070  
Facsimile: (877) 769-7945